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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/701,990	11/04/2003	Marc K. Hellerstein	416272005200	6654
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MORRISON & FOERSTER LLP 425 MARKET STREET SAN FRANCISCO, CA 94105-2482			EXAMINER	
			GITOMER, RALPH J	
			ART UNIT	PAPER NUMBER
			1657	
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			05/16/2008	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/701,990

**Applicant(s)**

HELLERSTEIN, MARC K.

**Examiner**

Ralph Gitomer

**Art Unit**

1657

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 March 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-29, 31, 32, 34, 35, 37-43 and 67 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29, 31, 32, 34, 35, 37-43 and 67 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

The amendment received 3/14/08 has been entered and claims 1-29, 31-32, 34, 35, 37-43, 67 are currently pending in this application.

In view of the amendments to the claims and arguments presented, the rejection of record under 35 USC 112, second paragraph, is hereby withdrawn. However, note the new rejection below.

The claimed invention is directed to a method of determining in vivo metabolism of either any sugar or fatty acid by administering a  $2H$  labeled sugar or fatty acid and detecting a labeled product. The claims have been newly amended to state the product detected is deuterium labeled water. The conventional method of determining such metabolism is to administer a carbon labeled sugar or fatty acid or a labeled water, all of which are taught in a number of the references cited in this application and determining a desired analyte. The dependent claims are directed to methods of administering and methods of detecting, all of which are conventional and given no further consideration here. As claimed and described in the present specification Summary and elsewhere, sugar and fatty acid metabolism determinations are considered equivalents; if applicants disagree with this statement, a restriction between sugar and fatty acid metabolism methods will follow.

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4-13, 18-24, 28-30—32 are rejected under 35 U.S.C. 102(b) as being anticipated by each of Rittenberg.

Rittenberg (J of Biol Chem) entitled "V. The Desaturation of Fatty Acids in the Organism" teaches administering deuterated fatty acids to determine fatty acid metabolism.

Rittenberg (J of Biol Chem) entitled "VIII. Hydrogenation of Fatty acids in the Animal Organism" teaches administering deuterio fatty acids to determine fatty acid metabolism.

Rittenberg (J of Biol Chem) entitled "X. the Metabolism of Butyric and Caproic Acids" teaches administering labeled fatty acids. On page 504 second paragraph there is a discussion regarding labeling carbon vs. hydrogen for studying fatty acid metabolism.

All of the features of the claims are taught by each of the above references for the same function as claimed.

Applicant's arguments filed 3/14/08 have been fully considered but they are not persuasive.

Applicant's response argues the above references do not teach detecting an abundance of one or more mass isotopomers of  $2\text{H}$  labeled water and applying combinatorial analysis to determine the metabolism.

All the Rittenberg reference teach determining labeled water. For example, referring to the last reference cited above, on page 504, first paragraph, "the deuterium administered as deuterobutyric acid was found in the body fluids in the form of heavy water." On page 506 second full paragraph, "the body fluids of the animals at the end of the experiment contained a considerable amount of heavy water, obviously due to oxidation of the caproic acid." On page 509, Summary 3. the heavy water determined is discussed. Regarding applying combinatorial analysis, the Rittenberg references analyze the results and to apply any known method of such analysis would have been obvious. No analytical results are claimed.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-29, 31, 32, 34, 35, 37-43, 67 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of each of Rittenberg in view of Jones.

The claims differ from Rittenberg in that they include administering  $2\text{H}$  labeled sugars instead of  $2\text{H}$  labeled fatty acids.

Jones (Am J Physiol Endocrinol Metab) entitled "An Integrated 2H and 13C NMR Study of Gluconeogenesis and TCA Cycle Flux in Humans" teaches studying sugar metabolism with labeled glucose, water and fatty acid. No 2H labeled sugars or fatty acids are administered, only 2H labeled water, and 13C labeled glucose and fatty acid.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to administer labeled 2H sugars to subjects to study sugar metabolism because the primary references teach administering 2H labeled fatty acids to study fatty acid metabolism and the secondary reference teaches administering 2H labeled water and labeled carbon sugars to study sugar metabolism. To select labeling H instead of C in the study of sugar metabolism is rendered obvious by the primary references which teach studying fatty acid metabolism with labeled H instead of labeled C for the same function, studying metabolism. No patentability is seen in the selection of labeling any element for the known function of labeling with the expected result. The study of metabolism by administering labeled reactants and then determining the resulting labeled products is old and to select which atom in the reactant to label would have been obvious in the absence of unexpected results.

Regarding the claims directed to managing patients, diagnosing, identifying, monitoring, and treating are all obvious in view of studying the metabolism associated with such pathology. Most medical testing is based on determining abnormal metabolism as associated with disease processes and the leap from abnormal metabolism to disease is old.

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The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-29, 31-32, 34, 35, 37-43, 67 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Each of the following applies in all occurrences.

The addition to the claims of "one or more mass isotopomers of 2H labeled water" or "one or more mass isotopomers" is not understood. Isotopomers or isotopic isomers is taken to mean isomer having the same number of each isotopic atom but differing in their positions. But in deuterium labeled water, the position of the heavy hydrogen does not differ. In new claim 67 "the combinatorial analysis" lacks antecedent basis.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ralph Gitomer whose telephone number is (571) 272-0916. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jon Weber can be reached on (571) 272-0925. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ralph Gitomer/  
Primary Examiner, Art Unit 1657

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Primary Examiner  
Art Unit 1657